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Form in Flowers.

COLOR, form, size, habit and fragrance—these are the characteristics which, varying from flower to flower, produce in their different combinations the myriad types that delight us. Fragrance, however, may be set aside just now as not appealing to the sense of sight; for it is this sense which judges of beauty, and it is of the beauty of flowers that we intend to speak. And especially of beauty as shown in cultivated plants and modified by the hand of man.

The fact has been noted in these pages that the average eye is more impressed and attracted by beauty of color than by beauty of form. To combine colors well needs, it is true, the most highly cultivated taste; but the appreciation of single tints or of gradations of one or two plainly harmonious tones is a not unusual gift. Form, on the other hand, is seldom thoroughly appreciated except by trained eyes. In consequence, although the judgment of florists and their patrons is sometimes at fault in matters of color, it is in matters of form that it oftenest goes astray.

One of the facts which prove this statement is the constant confounding of mere size with beauty. In everything which appeals to the eye—from trees to churches, from jewels to mountains, from pictures to rosebuds—size is a potent element in arousing interest and admiration, its appeal to the sense of wonder being constantly confounded with an appeal to the sense of beauty. There are many cases, of course, when it is a true æsthetic factor, rightly augmenting delight. Other things being equal, an immense church interior or a huge diamond is more beautiful than a small one. All occidental men would doubtless give a similar verdict with regard to trees. Yet are not the Japanese now acknowledged to be a people of finer artistic sense than our own? And a Japanese art-critic in America has replied, when the small size of certain New England trees was excused, that to care for the bigness of trees was "barbaric"—their form was the primary, their size but a secondary consideration. But, however it may be with trees, it is certainly barbaric to lay too much stress on size in flowers. When Nature herself makes them large she adapts shape and details to size. She draws their outlines with a bold hand, usually builds them of solid substance, gives them a massive array of pistils and stamens, and sets them on plants with sturdy stems and broad, firm leaves. Look at the Magnolia, the Night Blooming Cereus and the Artichoke if you would see big flowers as Nature loves to design them. There are exceptions to the rule, and Nature occasionally sets a big blossom on a small plant, but we instantly recognize the fact, and are more impressed by the oddity of such plants than by anything else about them. The best guide for man's efforts at improvement is always to follow the rule of Nature, not to imitate her exceptions. She can be graceful even when working with emphatic contrasts; but it is easier for him to succeed when he keeps to obvious harmonies.

There is a class of plants, just now very popular, which illustrates how gardeners may go astray in their improvements. These are the Tuberous Begonias. Differing much in the size of their leaves, these plants are naturally of low habit, with such weak flower-stalks that the blossoms droop, and with small flowers of somewhat irregular outline—that is, the type, as Nature designed it, was a small, drooping, irregular flower. The aim of the gardener, however, is to make it large, regular and erect. There are countless splendid "improved" Begonias in cultivation now, but the more one looks at them the more one feels that—apart from the variety of beautiful colors they show, to which all admiration is due—their cultivators have wasted their time. The increased size of the blossoms makes them look too large for the plants; their irregularity of outline and want of symmetry, so charming in smaller flowers, are displeasing on a larger scale, giving almost the effect of malformed flowers rather than of such as Nature had intended to be unsymmetrical; while the greater erectness of the blossom had destroyed its grace without giving it real dignity. But we are told the ultimate aim of the cultivator—true erectness and perfect symmetry—will soon be achieved. And if so, what will be gained? A commonplace-looking flower, with characteristics similar to those of a dozen others, in place of an individual, peculiar type that will have been "improved" out of existence. Big regular blossoms, holding their faces "well up," will undoubtedly be more "striking," but they will no longer be Begonias for any one who, beneath a name, cares to find a distinct floral type.

Of course, too, these Begonias are being doubled, and with their doubling the last traces of their identity will disappear. But it is almost hopeless to protest against this, the most common sin of cultivators. Who, that cares for types as expressions of Nature's creative power, and who that has any eye for beauty of form, can look with patience on the fashion which converts the exquisite cup of the Daffodil into a ragged lump of yellow, which mars the curve and fills the hollow of the Tulip's bowl with crowded petals, which "improves" the bell of the Hyacinth until it is no longer a bell, and the four-pointed star of the Bouvardia till it is no star? How, one wonders, has the Lily-of-the-Valley so long escaped, and when will Nature's beautiful half doubling of the Water Lily be carried further, until the last of the golden stamens disappears? And may not a "full double" Iris be the next high priced novelty? Nothing, indeed, seems too dreadful to anticipate, now that Narcissi are advertised for their close resemblance to double Camellias, and the ruined form of a Tiger Lily, dubbed *flore pleno*, decorates the pages of the latest plant-catalogues. Double Azaleas we have long had with us, and double Snowdrops. And if the shape and habit of the Begonia are to be utterly changed, will not some one make the Cyclamen hold up its head and spread out its petals in an orthodox way?

We do not wish to imply that there are no flowers which may well be doubled, that increase of size should never be aimed at, or that habit of growth can never be improved. It is only to protest against excess and misdirection

Form should be a prime consideration always. It should not be confounded with symmetry; and yet the truth should be remembered, that certain sorts of irregularity, charming on a small scale, are ugly when increased size makes them more conspicuous. A weak habit is often a defect to be remedied, yet at times it constitutes the whole character, grace and beauty of the plant. The multiplication of petals may often produce an effect so different from that of the natural flower as to constitute a new type, and one of much beauty. The type of the Dahlia has not been ruined by doubling—it has been replaced by another type with a certain formal beauty of its own. But such doubling often does no more than spoil the first type by turning it into a shapeless mass like that of many double Narcissi. Even double Roses should not be so big and so solid that neither grace of habit, nor beauty of general outline, nor freedom in the disposition of the petals remains.

The Jesup Collection of the Woods of the United States.

ON Saturday, November 15th, the "Jesup Collection of the Woods of the United States" was formally opened to the puplic in the Museum of Natural History in this city. For several years past the specimens have been shown in the great hall on the ground floor of the old part of the building, but much of its space was occupied by other collections, so their arrangement was not advantageous, nor could the drawings which accompany them be displayed. Now, however, the Jesup Collection alone occupies this hall, space for the other things having been found in the new wing of the Museum; and the public can appreciate the full interest and value of the wood specimens themselves and of the accessory collections which explain the trees that produced them and thus vastly enhance their significance. The old hand-book (which is shortly to be revised for a new edition) named 412 species of trees native to our country. All these, with one or two exceptions, are represented among the woods, and a few additional specimens have been secured since the hand-book was printed in 1885. Almost all the specimens are as fine, as regards both size and condition, as could be desired, and those which are less perfect will eventually be replaced by better examples. While each specimen shows the natural aspect of the tree with its bark, the character of the wood is shown in the upper portions by longitudinal, horizontal and oblique cuts, one half of each exposed section being plain and the other polished. The value to architects and artisans of the products thus displayed can only be realized by one who has passed the long rows of logs in review, and seen how many, as yet unfamiliar to commerce, show great beauty or singularity in color and marking. Information with regard to the strength of each wood is given, moreover, by the results of mechanical tests and chemical analyses recorded on the label-card, where also the scientific and popular names of the tree are given, while its habitat is shown on a little map. These labels, contrived for this collection by Professor Sargent, to whom Mr. Jesup entrusted the formation and arrangement of the collection, received a prize at the Paris Exposition last year and have since been imitated in at least one European collection.

Next to the woods themselves the most important feature of the collection is the series of large water-color drawings, representing the leaf, the flower and the fruit of each species in their natural sizes, which have been painted—in every case directly from nature—by Mrs. Sargent. About two hundred and fifty of these drawings are now shown, and the completion of the series is promised for the near future. As attractions for the popular eye they may outrank the wood specimens themselves, for they illustrate the beauty and immense variety of our forest-foliage and blossoms in a very charming and artistic way. Yet their value to the botanical student will be equally great, for although much freer and more graceful in treatment than the usual botanical illustration, they are absolutely truthful and exact. One point of excellence deserves especial notice. This is the way in which, although only isolated leaves and flowers or flower-clusters could be shown, the habit of the tree is suggested. The specimens are posed, to use the only available word, as nearly as possible as they would show in nature, so that we see at a glance not only the aspect of leaf and flower, but the manner in which the tree bore them.

To supplement these paintings we are promised a series of large photographs illustrating the chief species of our trees as they grow in their native home—a feature which again will delight the public, and will be of incomparable value to the landscape-gardener and the horticulturist. Of extreme interest, too, is the series of glass cases filled with examples of the way in which insects devastate our trees, the insects and their nests being carefully prepared natural specimens and the leaves upon which they are feeding being most skillful imitations. The same persons have been engaged upon these who prepared the collection of stuffed birds shown in their natural haunts which was presented to the Museum by Mrs. Stuart a few years ago.

It is impossible, of course, in a brief notice like this to explain the great interest which the Jesup Collection has for every student of Nature; but enough has been said, we think, to suggest, at least, its practical value in a number of different directions—to the engineer, architect and artisan, to the forester, horticulturist, landscape-gardener and botanist, and to the mere lover of Nature's works. There is no collection of the kind in Europe which is so complete and instructive as this one; and we think it may safely be said that there is none of any kind, scientific or artistic, in our own country which equals it for many-sided completeness.

About 1,200 persons were present at the opening on November 15th, and as many as the lecture-room could hold afterward listened to the first of this year's series of lectures by Professor Bickmore, of the Museum. The subject of this was, appropriately, "The Broad-leaved Trees of the American Forest," and it was illustrated by admirable pictures of forest-scenes and remarkable trees. No better engine than the Jesup Collection, especially if explained from time to time by free lectures of this description, can be imagined for the diffusion among our people of an accurate knowledge of our forests and a true love for them. Nor is there any subject with regard to which an increase of popular interest and information is just now more greatly to be desired.

A Slaughtered Giant.

OUR illustration on page 575 shows a *Sequoia gigantea* with choppers at work inside the cleft cutting their way through the trunk. This is not a tree of the first size, being less than twenty-five feet in diameter and about twenty at the point where it was cut. In point of beauty and symmetry it was one of the best of the surviving Big Trees. It stood until a year ago in the Tule River forest, Tulare County, California, and was sold by the private owner of the land to certain persons who wished to exhibit it. The plan was to take a section of the trunk, hollow it out to a shell and then divide it into convenient and portable pieces, so that it could be carried about and set up as a show. The project fell through, however, for lack of funds, and the section of the slaughtered tree never got beyond Visalia, in the county where it stood. It is now stored in that city. Let us hope that the original owner of the tree and its destroyers may some day realize that it will never again make such an exhibition of grandeur and grace as it did while towering above the spot where it began life as a seedling a thousand years ago.

The Sequoia Forests of the Sierra Nevada.

THE following paper was read by Mr. Frank J. Walker before the California Academy of Sciences on September 1st and published afterward in *Zoe*. Since that time the Tulare Reservation Bill has become a law, but it is not generally known that the Government still holds other forests of Big Trees which are quite as worthy of protection as those already included in reservations. Mr. Walker's paper places on record many facts concerning which every citizen of the United States should be informed, for these wonderful groves belong to the people of the East as truly as they do to the people of California. It was a laudable sentiment which made it possible for Congress to pass without opposition the act to rescue one of these groups of Sequoias; but, as Mr. Fernow stated to a Senate committee, there are economic considerations which demand with greater urgency that the protection of the Government should be given to many other forest-covered areas in these high mountain regions, because the water question cannot be solved without first solving the forest-question.

The accompanying map (page 573) gives the Sequoia forests as located by Mr. Walker. The squares represent

townships six miles square. Taking the estimates of the paper the amount of Sequoia forest in the reservation is 3,500 acres; the Government still owns 5,500 acres; the Government holds 4,500 acres which are otherwise claimed, while 24,000 acres have passed from Government ownership. The map also gives the boundaries of the Yosemite Reservation as lately extended. The reason for such extension, as may be plainly seen, is that it includes the sources and courses of the streams which find their way into the valley, and this will enable the Government to protect these waters from being destroyed or diminished or diverted to other use before they reach the valley.

In the Standard Guide Book to the Pacific Coast, of a late issue, we read this statement: "There are nine groves of Big Trees in California;" and in the descriptive sketch following this remarkable statement we find three of the nine groves mentioned as lying south of King's River, vaguely described as: The King's River grove, the grove in the basin of North Tule, and the grove in the basin of South Tule. There are in the localities named as containing three no less than seven distinct groves and forests of Big Trees, while in the enumeration given there is no mention whatever by the author of the several groves and forests of Middle Tule, Kern or Kaweah Rivers, nor of the most southern grove, on Deer Creek; in short, the omissions comprise some twenty distinct Sequoia groves and forests, aggregating an area of at least 25,000 acres. Few, indeed, of the inhabitants of Tulare County, where most of the forests are found, have any conception of the wide extent of their Sequoia possessions; probably not one person in 500 knows of the existence even of Big Trees on the Kern River slope, and many would dispute the fact—a fact I have never seen referred to in print—and yet there are no less than 2,000 acres in that region, and some of it the most dense forest-growth of *Sequoia gigantea* known to man. And so with other groves; many of them are to the general public practically unknown and unexplored.

It is my purpose in this paper to briefly mention what may be termed the forests of Sequoia, and the neighboring groves; and in making the distinction between forests and groves it will be necessary to draw a somewhat arbitrary line, and for this purpose we will classify as forests all areas of 1,000 acres or upward, and all below that as groves. According to this distinction we can safely assume that all forests of *Sequoia gigantea* are to be found to the south of King's River, and nearly all of them in Tulare County; and, with mere mention of the better known northern groves—the Calaveras, South Park, Tuolumne, Merced, Mariposa, Fresno and Washington—we will therefore confine our sketch to a description of this region only.

The first, going southward, and probably the largest compact body of all, is the Converse Basin Forest on the south slope of the South Fork of King's River, in Fresno County. The area of this tract is about 5,000 acres. These figures can at best be but an approximation. For most part the Sequoia country is so broken, and the variation of density of growth so great, and the limits so vaguely defined, that an exact estimation is almost impossible; besides, it is likely to be misleading from the fact that it represents, in some instances, what might be called a heavy continuous growth, while in others it is more or less broken and scattering. In nearly all cases there is found mixed with the Sequoia a plentiful growth of other timber, principally Yellow and Sugar Pine (*Pinus ponderosa* and *Pinus Lambertiana*), with a sprinkling here and there of Fir, Cedar and other trees. However, I have aimed everywhere to keep my estimates of areas well within bounds. This first forest, together with the one next in order, are owned by one of the leading lumber firms of California. And they are about to celebrate at Sanger the completion of their forty-mile lumber flume connecting their capacious mills in the mountains with the railroad on the plains. They propose to clean up everything as they go along, stripping the land bare, and moving their mills and extending their flume from point to point as the timber supply becomes exhausted. It will probably take years for them to reach the Boulder Creek Forest, so named from the affluent of King's River, on whose slopes it is found. The area of this forest and neighboring groves cannot be less than 1,500 acres, probably more. These two already mentioned lie together on the waters of King's River, in Fresno County, but the forest next to the south, the Fresno Big Tree Forest, is on the divide between the waters of King's and Kaweah Rivers, partly in Fresno and partly in Tulare Counties. Its original area cannot be computed at less than 2,000 or 3,000 acres, but so much of it has been stripped of its timber that its limits are hard to determine. Here have been the principal milling operations in Sequoia for the past twenty years. Four sections of it, containing what is known as the "Fresno Big Trees," have already been reserved by the United States Government, it being the only reservation ever made in these southern forests for the purpose of saving the Sequoia. This is the reservation recently confirmed by the Honorable Secretary of the Interior, and containing the famous Big Tree known as "General Grant," said to be forty feet in diameter.

Passing on to the west side of Township 14, Range 28, we find along Redwood Creek a forest of some 3,000 acres. This most magnificent growth has also passed from the possession of the Government to private ownership. Farther south, we next come to a forest on the North Fork of the Kaweah River, where there are upward of 1,500 acres of Big Tree forest still owned by the Government. The whole township is timbered and well worth preserving, aside from the Sequoia.

A few miles southward brings us to the Giant Forest, which, although still in the hands of the Government, is claimed by individual locators, by reason of their locations having been made in good faith and filed previous to the withdrawal from entry of these townships, as explained hereafter. It is generally thought that they will substantiate their claims and acquire the land, and public sentiment seems to favor it. Passing to the Middle Fork of Kaweah River, we find several groves, some of which are still in the hands of the Government, but there exists on this branch no Sequoia tract that could properly be called a forest.

Southward, on the East Fork of the Kaweah River, we come to what is designated as the Mineral King Forest, from a mining district of that name, comprising, with the detached groves, some 3,000 acres; the main body is in Township 17, Range 30, the township whose recent restoration to entry gave rise to the movement culminating in the Vandever Sequoia Park Bill, lately passed in the lower house of Congress. In December, 1885, Commissioner Sparks, of the General Land Office, withdrew from entry eighteen certain townships, of which this was one. The reason for this suspension was the alleged fraudulent character of the surveys. We need not consider the condition of these surveys; but, from the character of the country, it would seem that the subdivision lines could be more readily run with a ruling pen than with chain and transit; and at that time the compensation for either system of survey was supposed to be the same. But one thing is certain—on many of the Government plats you will search in vain for any trace of Sequoia growth, even where the alleged lines run through sections now known to be heavily timbered with the Mountain Redwood. It is to this fact largely, no doubt, that the very existence of certain Sequoia forests has so long remained unknown to the public.

The fact that several of the suspended townships contained Big Trees had nothing whatever to do, so far as we know, with influencing the act of the Commissioner. But Commissioner Sparks "builded better than he knew," and the ultimate outcome of his order of withdrawal has been to preserve, in the Government's undisputed possession, several forests of these Big Trees that would otherwise have gone the way of all the rest into the hands of speculators and lumbermen. Thus the matter remained in statu quo till the opening of the present year, the friends of Sequoia preservation resting easy in the fancied security of their position, inasmuch as the Department had expressly declared its policy not to restore to entry these lands in advance of an official examination. At the opening of the present year, parties interested in acquiring timber by some means secured the release of the suspension of Township 17, Range 30. It was restored to entry on May 23d, and in less than six weeks the entire Mineral King Forest was filed on by timber-land claimants, and the tract effectually cleaned up. While thus the greed for Big Tree timber was developing the supply was growing short, and the attention of timber prospectors was turned to other forests, and it was found that in the next township to the south there was a forest practically unexplored that offered the best field for their next work. The same measures that had proved so successful in opening up Township 17, Range 30, were forthwith set to work to secure this more valuable prize. At this juncture a few citizens of Tulare County took steps to thwart the attempted spoliation of the Sequoia forests. As the forest in Township 18, Range 30, was the one the timber men most wanted, the inference was reasonable that it was the best of all for the Government to keep. The ultimate outcome of its opposition has been the Vandever Bill, embracing in the proposed reservation two townships and four sections

to be set apart as a National Sequoia Park. This reservation includes the forest marked on the map as the Sequoia Park Forest, and also the larger part of the Homer Peak Forest, somewhere from 3,000 to 5,000 acres.

South of these, following the Sequoia belt, we come to the Dillon Mill Forest of over 1,000 acres, with but little remaining to the Government, and from which thousands of Sequoia fence-posts are being hauled this season. And still farther southward, partly in the south-east corner of the same township, and extending into the corners of three other townships, is the Tule River Forest. Much cutting and slashing for a period of years has here been going on; and during this time different mills have been drawing their supply of Mountain Redwood from this forest, and still by far the larger part remains. Here exists a noted centre of Sequoia growth known as the "McFadyen 80" (acres), estimated by lumbermen to have on it timber sufficient for 8,000,000 feet of lumber. Only one mill is running this season. This, with the Pixley Grove, we will estimate at 3,500 acres. About six miles directly south is the Putnam Mill Forest containing some 4,000 acres. A portion of this, that in Township 20, Range 31, is still owned by the Government, and is a very beautiful forest of over 1,000 acres. Next comes the Fleitz Forest, owned by a Michigan syndicate; to the south of which are groves owned by the syndicate known as the "Kessing," the several tracts comprising an area of some 4,000 acres. Here again, in the south-west of Township 22, Range 31, the Government possesses a forest of somewhat uncertain value and extent, known as the Indian Reservation Forest, and estimated at 1,500 acres. It is not generally known that there exists any Sequoia on the Kern River slope, but there are on that side at least 1,500 or 2,000 acres in groves scattered along the slope from Freeman's Valley southward for some fifteen miles. Only one of these tracts could be classed as a forest, that of Freeman Valley. Here is a tract of about 1,000 acres, a limited portion of which is probably the heaviest growth of *Sequoia gigantea* in the world. Unfortunately this also has passed into the hands of lumbermen. One grove more remains to be mentioned, not because of its intrinsic merit, but because of its location, it being, so far as known, the southernmost limit of Sequoia. It is that on Deer Creek, indicated on older maps as "Mammoth Grove." It contains less than 150 Sequoias, scattered over an area of perhaps 300 acres.

This completes the list. The Sequoia forests proper therefore extend over a belt of country beginning at Converse Basin on the north and ending with the Indian Reservation Forest sixty miles to the south. The groves and forests together in this region are upward of twenty in number, with an average distance between them of perhaps three or four miles.

Within this scope of country, a moderate estimate of the Sequoia area would be, according to the foregoing figures and including a few unnamed groves, 37,500 acres, divided between the several river systems as follows:

King's River	7,500
Kaweah River	14,000
Tule River	14,000
Kern River	1,700
Deer Creek	300
Total acres	37,500

It has been sufficiently shown that there are in the state several forests and groves of Big Trees still belonging to the Government aside from those embraced in the Vandever bill. To ensure the safety of these, and to put them beyond the designs of timbermen, and, above all, to protect them from devastating forest-fires, it is exceedingly desirable that they be reserved and placed under expert supervision. We need no reminder that the greed of timber and cattle men will soon work havoc with what remains unless something be done to stay the devastation; and if we would save a portion we must begin at once.

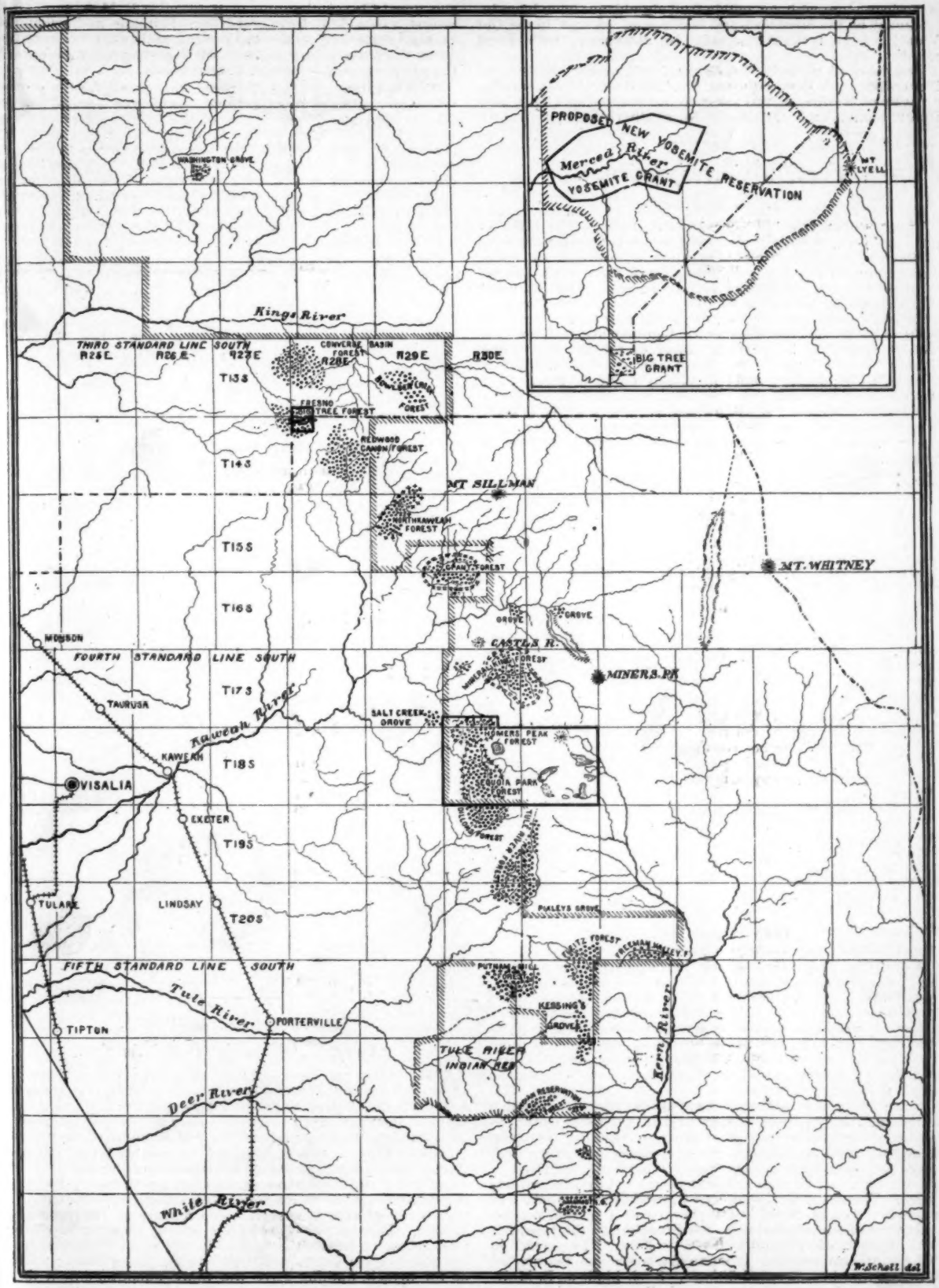
Concerning the utility of the region embraced in these limits as the best natural reservoir for the storage of waters needed for irrigation we need not dwell. But for a moment let me touch on the suitability of the country for a park because of its charming natural attractions. You need hardly be reminded of this. The heart of the Sierra culminating in Mount Whitney affords grand scenery of peculiar charm and great variety. Here are three Yosemites rivaling their noted prototype in many features, with a little world of wonders clustering around the headwaters of Kern, Kaweah and King's Rivers. We will simply mention the Grand Cañon of the Kern, where, for twenty miles, the mad waters of the river are walled in with the continuous battlements of the California Alps, crowned with nameless and unnumbered domes and towers. Then, only a few miles across the divide, extends the cañon of King's River with its wealth of impressive scenery, and some eight miles farther to the north lies the valley of Tehipitee—the gem of the Sierra—with its wondrous dome of rock rising in rounded majesty some 6,000 feet from the level of the river-cleft meadow at its feet. Yet a view of the most impressive and characteristic scenery of the region is to be earned by scaling one of the lofty peaks of the Kaweah Range. At least a hundred peaks here rise to altitudes exceeding 10,000 feet. One never can forget the impression who has once looked out over the California Alps from the pinnacle of Miner's Peak. As I once before said, in describing this scene: "Here amid the companionship of peaks one beholds with speechless wonder the spectacle beyond. No satisfactory view of the Whitney Range can be found from the San Joaquin plains. The intervening Kaweah Range veils the view of the higher peaks beyond. But here, standing on the crest of the Kaweah Sierra, one looks across the Grand Cañon of the Kern, and the encircling wilderness of crags and peaks is beyond the power of pen to describe. Mounts Monache, Whitney, Williamson, Tyndall, Kaweah and a hundred nameless peaks—the crown of our country—have pierced the mantle of green that clothes the cañons below, and are piled into the very sky, jagged and bald, and bleak and hoary—a wilderness of eternal desolation."

Plant Notes.

Some Recent Portraits.

THE November number of the *Botanical Magazine* contains a figure of *Acineta densa* (*t.* 7143), a magnificent Orchid from Costa Rica, belonging to the tribe of the Vandas, and related to Lueddemannia and Peristeria. It produces pendulous, dense-flowered racemes of large, pale golden yellow flowers. This is not a new inhabitant of gardens, having been introduced into England as long ago as 1849. It is still, however, rarely seen, although one of the showiest of all the plants of its class.

There is a figure (*t.* 7144) of *Eucharis Bakeriana*, a native of Columbia, and related to the well known *Eucharis Amazonica*, or, as it should be called, *E. grandiflora*. Another of the bulbous species of Iris (*I. Sindjarensis*, *t.* 7145), allied to *I. Caucasica*, *I. orchidoides* and *I. Palæstina*, is figured. It is a dwarf plant, with crowded, lanceolate, broad, distichous leaves and pale lilac flowers, discovered in 1865 in Mesopotamia by Dr. Hansekenecht, and introduced into cultivation by Max Leichtlin, of Baden-Baden. There is a figure of the dwarf variegated Bamboo (*Arundinaria Simoni*, var. *variegata*, *t.* 7146) best known in cultivation as *Bambusa Simoni*, a native of Japan, and introduced many years ago into the garden of the Paris Museum by one of the French Consuls in China, Monsieur Simon. It is a hardy, tufted plant, reaching in Europe a height of eight or ten feet and flowering sparingly. "In Algiers it is described by Rivière as forming rhizomes that bury themselves one and a half to two feet, and from which new culms rise in the beginning of May, which, during the first year, are simple, clothed with spathaceous sheaths, and attaining twenty to twenty-five feet in height. Toward the end of the second year these culms ramify in whorls from above downward and flower. The leaves are eight to ten inches long and quite glabrous." The specimen which served as a subject for the illustration is "from a magnificent plant grown by Mr. Paul in a Camellia-house at Cheshunt, the culms of which are fourteen feet high and as thick as the thumb"—a suggestion of the best way this plant, as well as many other species of the dwarf Bamboos, can be used in our northern states in decorative gardening. There is a figure of the well known *Pereskia aculeata* (*t.* 7147), a member of the Cactus family, and one of the first of the tropical plants introduced into Europe, it having been cultivated in the Royal Gardens at Hampton Court as early as 1696. In Kew, it appears, it has been cultivated ever since the foundation of that establishment, although there is no record of its having flowered there until last year. It is a straggling or climbing bush or small tree whose branches are described as climbing, but more generally it climbs by means of the hooked spines of the young branches. The flowers are an inch and a half in diameter, with pure white, rosy or yellowish white petals. The fruit is the size of a small gooseberry, globose, transparent, few-seeded and covered with small spreading leaves, the free tips of the sepals. The leaves are used as a pot-herb in Brazil and the berries are eaten in all parts of the tropics of the New World.



The Big Tree Forests (*Sequoia gigantea*).—See page 570.

As the editor points out, "It is singular that so common an American plant with an edible fruit should not have been introduced by the Spaniards and become an 'escape' in the Old World, where I think it would be naturalized with great rapidity."

The colored plate in the *Revue Horticole* of the issue of November 1st is devoted to the Mexican *Senecio Ghiesbreghti*, a native of Mexico and an extremely ornamental species, which is now often seen in the gardens of southern Europe.

Foreign Correspondence.

London Letter.

TREES IN TOWNS.—Dr. M. T. Masters, editor of the *Gardeners' Chronicle*, lectured recently before the Royal Horticultural Society on the subject of Tree-planting in Towns. An enormous amount of material and labor are or have been wasted by planting indiscriminately all kinds of trees and shrubs, most of which prove incapable of enduring the atmosphere and other trials inevitable in town streets and gardens. The right thing to plant and the manner of planting are unknown to vestries and local boards, and many of these bodies have already learned by sad experience how ignorance, when it dabbles with planting, must inevitably come to grief. Dr. Masters' lecture will be published in the Journal of the Royal Horticultural Society. It will include an exhaustive list of such trees and shrubs as have proved to be adapted for cultivation in towns. It would be interesting to us to have the results of American experience in this matter.

PERNETTYA MUCRONATA.—Are American gardeners acquainted with the pretty berried varieties of this plant, which were raised in an Irish nursery about ten years ago? The type is, of course, well known everywhere as a first-rate hardy shrub which bears an abundant crop of bright crimson berries every winter if happily situated. Mr. Davies of the Hillsboro Nurseries, County Down, has added considerably to the value of this plant by raising from it a number of varieties remarkable for the rich colors of their berries. White, pink, lilac, purple, cerise and almost black berried varieties were obtained, and these are now becoming popular, not only for the open border, but as pot-shrubs for winter decorations in-doors. Plants a foot high, compact as Box and thickly laden with berries may be grown in a five-inch pot, and such plants are as attractive as any berry-bearing plants in cultivation. Out-of-doors the plants sometimes fail to produce berries, that is in some gardens. In Mr. Davies' nursery I saw acres of them about seven years ago, and every plant, from babies six inches high to large bushes as tall as a man, was a mass of fruit. It is probable that a sandy, peat soil is most conducive to fruit-production in these plants; such, at any rate, is the character of the soil in Mr. Davies' nursery. Variegated conifers were much better colored in this nursery than I remember to have seen them elsewhere. In Ireland the Pernettyas are almost as commonly grown for winter effect as *Solanum Capsicastrum*. The varieties are named Alba, Carnea, Purpurea, Macrocarpa, etc., names which are descriptive of the berries. They are worth trying in America, if this has not been done already. [*Pernettya mucronata*, like other plants of the southern Hemisphere, is not hardy in the northern states.—ED.]

CHRYSANTHEMUMS.—There will be over fifty large exhibitions of Chrysanthemums held in England during next week. The National Chrysanthemum Society will devote four days to a gigantic exhibition, conference, etc., to mark the centenary of the introduction of the Chrysanthemum into England. In most of the parks and public gardens of London special efforts are annually made to produce an imposing show of this most popular of all winter flowers. Kew, Finsbury Park, Victoria Park, Temple Gardens, with several other places of popular public resort, have each an exhibition of no mean order. The literature of the Chrysanthemum crops up everywhere at this time of year, daily papers, society papers, papers of every description commenting upon, discussing and offering advice on the management of the hundreds of varieties now cultivated. No flower, not even the Rose, has ever been more generally cultivated and admired in England than the Chrysanthemum is now. The taste for large, well formed flowers, combined with bright colors, which now prevails in England, was recently very much laughed at by the President of the Japanese Horticultural Society when on a visit to Kew. The perfection of Chrysanthemum culture in Japan is a large bush bearing an enormous number of small flowers. Such kinds as E. Molyneux, Elaine, Avalanche and Mrs. G. Rundle would not, he said, find any favor with Japanese growers. In my opinion the finest Chrysanthemum ever raised is E. Molyneux. It is almost a miracle in form and color. Nothing in horticulture is more remarkable than the development of such a flower from the little yellow buttons of the progenitor of garden Chrysanthemums—namely, *C. morifolium*.

SALVIA SPLENDENS and *S. azurea*, var. *grandiflora*, are most useful plants in the greenhouse at this time of year. The rich scarlet flowers and bushy habit of the former are as effective as anything we have, whilst the bright blue flowers of *S. azurea* are charming amongst the commoner colors which prevail in the greenhouse in November. At Kew about a dozen species of Salvia are grown out-of-doors all summer along with the Chrysanthemums, and housed at the same time. The treatment that is good for the one is equally good for the other. These two genera and *Celosia pyramidalis* are the most striking features of the conservatory just now.

CATTLEYA WAROCQUEANA.—Better acquaintance with the plants distributed under this name and a comparison of their flowers with those of some of the forms of *Cattleya Gaskelliana* has led to the conclusion that the latter name must stand for both. In the time of flowering, the character of the pseudo-bulbs, the form of the flowers and the wide range of variety in their colors, there is no marked difference between what was introduced and distributed by Mr. Sander seven years ago as *C. Gaskelliana* and this new introduction of M. Linden's Company. At the same time, there are amongst the latter forms which differ from anything previously seen in what was introduced by Mr. Sander as *C. Gaskelliana*. We are indebted to M. Linden for additional proofs of the exceptional value of this sub-species as a garden plant. Some of the flowers recently exhibited by M. Linden showed a close resemblance to *C. speciosissima* (*Luddemanniana*).

ODONTOGLOSSUM CRISPUM.—There is apparently no danger of this Orchid ever becoming extinct as a wild plant, for it must be as abundant on the mountains of New Grenada as the Primrose is in the copses of England. Hundreds of thousands of plants are imported into England every year, and they may be bought at the auction rooms at seventy-five cents a dozen. Ever since the year 1863, when the three collectors, Weir, Blunt and Schlim, found themselves sailing in the same steamer on the same errand, namely, to collect plants of *Odontoglossum crispum* for the Horticultural Society, Messrs. Hugh Low & Co. and M. Linden respectively, this Orchid has been imported in enormous quantities annually. What has become of the millions of plants thus poured into European gardens? At first many were killed by growing them in a stove temperature, but even now, when the conditions afforded under artificial treatment are the best possible, there are not in cultivation many examples of *O. crispum* that measure a foot in diameter. Is this plant naturally a short-lived one? Auction sales are not always the best means for stocking one's Orchid houses. The farming of Orchid grounds where the plants are wild enables the "farmers" to select the best varieties before the plants are dispatched to England or other countries to be sold as "unproved." On this side the best growers send to the auction rooms all the varieties that are not considered worth growing, keeping only those that are of good quality. It therefore follows that the beginner who returns from the auction rooms with "good established plants, bought for a few pence each," has got only the refuse of other collections. Of course they are Orchids all the same, and worth what they cost. Good varieties are costly in spite of the abundance of the plants in the market.

Kew. *W. Watson.*

Cultural Department.

"Very Good" and "Best" Apples.

WE who are and have been working upon our cold northern border to extend the culture of tree fruits successfully into the region of hard winters occasionally feel, when we read the criticisms of some who are recognized as experts in pomology, that our labors are not thought of very great worth to the country at large. I have sometimes thought that perhaps some prejudice entered into the criticisms we meet with; and I have to console myself with recollections of the kindness with which such work was recognized, even in its small beginnings, by such noble leaders as Downing and Wilder. The former showed his strong recognition of the importance of these experimental labors when he bequeathed his pomological library and notes to Professor Budd; while, as for myself, nothing gave me more encouragement than the receipt, four years since, of a letter from Mr. Wilder in

which he said: "You are doing the country great good by publishing the results of your experience in the growth of fruits on our cold northern border line." Of course, I felt that the plural form of the pronoun rightly embraced and included such men as Gibb, Tuttle, Jewell, Sias, Gideon and numerous others; some of whom, though doing much good work, have not contributed as much as might be wished to the written record thereof.

Felling one of the Big Trees (*Sequoia gigantea*).—See page 570.

At this time, however, I only desire to say something that has been impressed upon my mind by the frequent complaint made by certain pomological writers in regard to the quality of iron-clad tree fruits. These writers, without exception, live where such fruits are not required. The criticisms they make are natural enough from their point of view; but they emphasize them so persistently, and with so little real acquaintance with conditions and circumstances, that they partake of the character of assaults, and tend to discourage where Downing and Wilder saw good reason to encourage experiment.

The charge against the iron-clad apples as being deficient in dessert quality is true, and it is not true. It is true, just as the same criticism made by Englishmen against American apples is true. It is not true just as these English criticisms are not true. By this I mean that we are shipping to England a good many apples that do not approach in fine dessert

quality the best and most carefully grown among the choice table apples of Europe. But the English public buys and pays good prices for some of our poorest American apples. The Ben Davis, even where it is most at home and is well grown, is scarcely "good" for eating out of hand, yet for shipment to England it stands among the first in point of demand and in price. The Baldwin at its best, as grown in south-western Maine, is perhaps the apple first in demand for trans-Atlantic export; yet I never heard or saw the Baldwin named in a list of our best dessert apples, while the English experts think less of it than its American critics. "Its size, color and keeping quality are what sells it" is the verdict upon both; and the Rhode Island Greening, in its best form (yellow fleshed), though far superior to the Baldwin, hardly equals it in price, either at London or Liverpool. Northern Spys and Kings stand higher, but do not touch or approach the standing of the best Newtown Pippins.

Not so many as ten of the iron-clad Apples are well known outside of the region where they are chiefly grown. They are generally judged upon the character of the Alexander, the Red Astrachan, the Oldenburgh and the Tetofsky. When we ask critics of these apples what they mean by the poor quality of the Russian or iron-clad Apples, they invariably refer to these. Yet Astrachans, Oldenburghs and Alexanders are very salable apples in all our large markets. The Wealthy is never referred to, but the Wealthy is better than the Baldwin. The Prolific Sweeting is unknown or ignored, yet no fall sweet is its superior in appearance, or in quality for dessert or baking. St. Peter, Switzer, Longfield, Winter St. Lawrence, Shiawassee, Gideon's Peter have been grown long enough to be easily had for testing, yet they are not named. But they will all rank with the sorts that stand uncontested as "very good" or "best."

But how many of these "best" dessert apples are on record in American pomology, which scores altogether more than a thousand named and described varieties? Let us take the American Pomological Society's select record of 369 varieties and count them. There are just twenty-one of them, and the odd one is foreign. In the "very good" list there are 155 varieties, of which twelve are foreign and five are iron-clads, leaving but 132 apples in this class of our native apples outside of the native iron-clads. In all, then, of our American named apples (including Canadian varieties) there are but 142 that are ranked above the humble "g" which marks our culinary fruit of this class.

Our native iron-clads, then, are not below the average of the Society's select list. As to the Russians, no grade is yet assigned to any of those recently admitted to the record. This shows it to be the opinion of the Society that the time has not yet come to fix their place. That is precisely the opinion held by those who are most interested and have had the longest experience with them. As the students of these apples take this position, why should those of less experience and knowledge regarding them be in such a hurry to give judgment against them? Of the whole list no American, unless it be Professor Budd, knows the exact season or value of twenty of the iron-clads of north-eastern Europe.

Newport, Vt. *T. H. Hoskins.*

The Root Rot of Salsify.

During the past two years gardeners have complained of much decay in Salsify roots. Before the crop is harvested some of the plants will be seen to have a pale yellowish appearance and soon the further growth of the top ceases. In the worst cases all of the plants are a mass of rottenness long before the time for harvesting comes.

An examination of the roots shows that the decay usually begins at the lower end of the main root and quite rapidly works its way up to the crown. The decay is particularly soft, very complete and somewhat offensive. In the decayed portion there is little left of the structure of the root, excepting the scattering vessels and woody fibres, which, having thick walls, resist the corroding action of the agent of decay. No threads of any Fungus are to be found in recently disorganized tissue, but thin sections of the decaying substance of the root reveal under the microscope great numbers of bacteria. The first effect of the germs is to dissolve the substance that holds the cells of the root tissue together. After this they penetrate the wall of the cell and increase so rapidly as to literally fill the infested cell with these minute bodies, each in constant motion. A view of such a cell under a high power of the microscope suggests the activity one may see in a bee-hive during the best week in honey-making.

Inoculations were made of the bacteria upon the healthy tissue of other roots, and the infection spread from each point with remarkable rapidity. Other kinds of vegetable substance were treated in like manner, and it was found that all of the following were susceptible, but not to an equal extent: The fruit of the Egg-plant, Sweet Potato, White Potato, Onion and Apple. The egg-plant was entirely decayed in thirty-six hours, and the apple least affected. The progress of the decay of the various substances was in the order in which they are named above.

As to the beginning of the decay in the Salsify-roots nothing can be said but the decay as found when well under way is not attended by any insect or any Fungus, save the bacterium, which latter is constantly present in the decaying tissue, and small portions of this decaying substance are able to convey the activity to healthy tissue of the same host and to representative types of vegetables, fruits, tubers and other roots.

What needs to be done in the way of a remedy it is not easy to say. As the trouble probably begins below ground, and some distance from the surface, it is difficult to detect the presence of the trouble at the outset. The paling of the herbage should suggest an examination of the root, and if it is found decayed the plant should be dug and destroyed. It is not likely that any fungicide can be sprayed with good effect upon the plant. It is possible that large quantities of manure in the soil may have furnished breeding ground for the bacteria of decay. It would therefore be well to test the value of some commercial fertilizer upon this crop. As the decay is remarkably contagious, care should be exercised in discarding all roots at harvesting, and it should be borne in mind that the virus is active upon other similar food substances.

Rutgers College. *Byron D. Halsted.*

Carludovicas.

These form a handsome genus of foliage plants, which, from their general appearance, give the impression of being Palms, though in reality they belong to a division of the *Pandaneæ*. The Carludovicas are of free and rapid growth when under congenial conditions, and are deserving of more extended recognition as decorative plants than they have yet secured, for they are not only highly ornamental as stove or conservatory specimens, but may also be used in an out-door foliage bed during the summer, provided they are not exposed to the full force of the sun. Of course it would not be a wise measure to take a Carludovica from a close, warm house and plant or plunge it out-doors for the summer without any further preparation, as the result would probably be unsatisfactory; but if treated as all foliage plants should be treated before they are planted outside—that is, if they are gradually hardened off by means of increased light and ventilation—they may be used for out-door decoration with very pleasing effect and without injury to themselves.

In-doors they prefer an open, well-drained soil which contains a fair proportion of peat, and when the plants are well established an occasional watering with manure-water is beneficial and tends to keep up the color of the leaves. Carludovicas are propagated by division, as most of the varieties sucker freely, or by means of seeds, when these are available; but as the seeds are seldom offered the first-mentioned method is that most generally adopted.

Among the varieties in general cultivation, or rather, most frequently met with, as none of them are particularly common, *C. humilis* is the best. It bears leaves of rich light green color, one to two feet long and nine to eighteen inches wide, and deeply cleft or bifid at the apex, making a shapely plant, bearing some resemblance to a Licuala, though without the thorny leaf-stems of the latter. *C. humilis* is possibly somewhat more tender than the following sorts, and some discretion should therefore be used in regard to its out-door exposure.

C. palmata is another handsome plant, with large palmate leaves that are deeply divided into narrow segments, the entire leaf being dark green in color. The leaves of this species are thrown up on long foot-stalks and have a very graceful effect. *C. palmata* also has some reputation as the plant from which the so-called Panama hats are said to be made. The young leaves, cut for this purpose, after having passed through various processes of steeping, bleaching, etc., are split into narrow strips and then plaited into hats.

C. rotundifolia is also a fine decorative plant, with general characterietics similar to the preceding sort, though the plants are quite distinct, as close examination will show. *C. rotundifolia* has fan-shaped leaves of a bright green color and deeply cleft into narrow pendent sections. It is not quite so large a grower as *C. palmata*, the latter sometimes attaining a height of twelve to fourteen feet under favorable conditions, while *C. rotundifolia* seldom exceeds six to eight feet.

One of the oldest species of this genus is *C. atrovirens*, a plant that deserves its specific name, for the deeply bilobed leaves, as well as their foot-stalks, are of an extremely dark shade of green. The leaves of this species are gracefully arched, and from a distance have some resemblance to the foliage of a Curculigo. *C. atrovirens* is a free grower, and usually produces a number of suckers around the base of the parent plant, so that its increase is a comparatively easy matter, and as the foliage of this sort is quite hard it makes a useful plant both in-doors and out.

In addition to the few species here mentioned there are some others in cultivation, of which one, *C. purpurata*, is somewhat similar to *C. atrovirens*, but differs from it in having reddish purple leaf-stems in place of the dark green ones of *C. atrovirens*. Another fine variety of more recent introduction is *C. Plumieri*, which makes a very handsome plant, but it is not so easily obtained as most of the above mentioned species.

Holmesburg, Pa. *W. H. Taplin.*

Variation in Color of Chrysanthemums.

The Garden (London) of November 1st contains an interesting communication from Mr. Edward Molyneux, the well known grower, as to variation in form and coloring of Chrysanthemum flowers. Mr. Molyneux is a close observer of this family of plants, and his notes, always interesting, may usually be accepted without question. His conclusion in this article, however, "that the whole cause of the variation of color lies in the date the buds are formed" is not entirely correct. It is, of course, well known to every one having experience in cultivating the Chrysanthemum that the buds formed and selected at different seasons will produce forms and colors sometimes almost radically different from each other, and, as a matter of fact, crown-buds of most varieties produce flowers almost always differing in some respects from the terminals in form. Mr. Molyneux's conclusions might be correct as to color variations if only plants grown under usual greenhouse conditions were considered, and perhaps he had plants under glass, as usually cultivated, in mind when writing the article. But there are other conditions of culture, and any one who has grown these flowers, either under shade or in the open, must have observed that besides the difference in the time of bud formation more or less light is an important element in the coloring of many varieties, especially those of lilac and red shades. Persons having greenhouses with imperfect or not very clear glass will often notice a fading out or lightening of some colors, but this difference becomes much more marked when the direct rays of light are entirely excluded, as under a temporary canvas or other covering so often used. Having grown fine lots of flowers under a temporary tent, and others in a sheltered south border practically in the open, though with some overhead protection, I have been interested in noting the colorings of the various varieties under these two extremes of exposure. My experience under glass has been so slight that this will not be considered.

The variety Puritan seems to have been first exhibited in England this year, and its varied colorings excited some comment and were the immediate cause of Mr. Molyneux's note, and he explains that "the early formed buds give blooms characteristic of its name, . . . later buds give the deep lilac color sometimes seen; . . . both colors are sometimes to be found early in the season, for the reason that this variety is an early flowering sort, and although both kinds of bloom can be had at the same time and from buds of different dates, those earliest formed require longer to develop from the bud stage." That is not the nature of Puritan with me at least. My early flowers of this variety in the open were a full lilac; they were after covered, and all color disappeared except a slight trace on the lower petals. Those from later buds under the tent are of the purest white with no trace of lilac, and this has heretofore been the rule with this flower in that position; if grown near the edge of the tent there is usually a faint flush of lilac on the lower petals.

Admiration is a beautiful old variety if grown under cover, with a white centre, shading outside to a delicate pink. In the open, regardless of any time of bud-forming, it makes flowers of a turbid blue-red and is entirely destitute of any beauty. Madame C. Audiguier seems to be a freaky variety, which has sometimes run counter to my experience with other varieties, for I have had it well colored under cover and nearly white in a sheltered corner, but fully exposed. The effect of shading is not visible on the whites or yellows usually, though it slightly lightens the latter and clears out flesh tints as in Domination. It is in some forms of red that I find flowers are more seriously affected. Val d'Andorre, Lord Byron and flowers of similar character are apt to be streaky and off color no matter when buds are taken. The favorite variety, J. Collins, is not seriously affected, though it loses some of the metallic tints so characteristic when grown in the open. An early bud which I picked to-day was richly colored in remarkable contrast to flowers from later buds, which, under the same shelter, have only developed a peculiar tan color. All of which, of course, serves to prove that different conditions and different cultivation in the garden produce different results. Among the Chrysanthemums one can find infinite pleasure, from early spring till the last flower is withered, in watching the different phases of these wonderfully varied plants. It is not surprising that the Chrysanthemums, single varieties of which have such chameleon-like habits, are growing constantly in favor of cultivators.

Elizabeth, N. J. *J. N. Gerard.*

Notes from a Wild Garden.

THE showy Lady's Slipper (*Cypripedium spectabile*), to which repeated reference has been made in GARDEN AND FOREST, is rarely seen in cultivation. This neglect can probably be accounted for in the main by the limited areas in which it is found, that it is nowhere abundant and that it rarely bears fertile seed. But a little experience I have had seems to indicate that it may be readily propagated. Five or six years ago I introduced a plant to my garden. The first year it sent up but a single stem; but the stems have since been increasing at the rate of about one a year, and the past season there were five, all of which flowered, two or three bearing two flowers each. A division of the roots (which might have been made sooner to advantage) would of course now multiply them indefinitely. The plant, in the first place, was given a prepared soil of rich leaf-mould in a damp and partially shaded situation, and carefully mulched each successive year.

The corm of the Green Dragon (*Arisæma Dracontium*), of which mention was made in former notes, was reset the last season, as before, in a rich damp soil, and made a most remarkable growth. The terminal and principal leaf measured eighteen inches across, the leaflets all gracefully drooping with their own weight. The rigid upright stem, three-quarters of an inch in diameter near the ground, was over two feet in height and bore a second well developed leaf. The plant never failed to attract attention for its oddity. Of fair size when first introduced to the garden, it has been increasing in size each succeeding year. The corm the last season measured three inches in diameter or about the size of the mouth of a tea-cup.

To whom has it ever occurred to cultivate the Wood-Nettle (*Laportea Canadensis*) as an ornamental plant? And yet it only awaits a trial to prove to any one its effectiveness as a decorative plant for certain positions in the garden. Its merit was discovered to me only by an accident. In removing another plant from the woods some of the roots of the former remained in the soil, which, springing up, were allowed to grow, and for several years past it has formed a singularly effective clump of rich green foliage about four feet high. The ample leaves are still larger, the stems are taller and the foliage much increased by cultivation, and the great, spreading cymes of the strange-looking greenish flowers—the striking feature of the plant—are also much enlarged. It is enough to say a plant that will force the question from the most casual observer, "What is it?" is a success and needs no further commendation, and such is the Wood-Nettle in cultivation. Give it a rich soil in a damp, shady spot, and all it asks is to be let alone.

Fairview, W. Va. *W. E. Hill.*

Notes on Shrubs.

A FEW plants of the Heath family are well known for the beautiful effects of autumn foliage which they assume. While some species have valuable characteristics of this kind it does not follow that all the species of any genus have any similarity in their manner of autumn coloring and defoliating. The foliage of many of the Blueberries and Huckleberries assumes bright red, crimson or orange colors in the late autumn, and it often persists much longer than the bright hued leaves of a majority of plants of other genera.

In the latter part of October and the early portion of November the High Blueberry (*Vaccinium corymbosum*) often exhibits splendid coloring which is hardly surpassed by the Sumachs, whose leaves fall much earlier. Although the common Low Blueberry (*V. Pennsylvanicum*) often brightens the waste places which it covers it is not so satisfactory under

cultivation that it could be recommended as an effective undershrub in late autumn. It is valuable simply for its fruit, which is the staple and earliest Blueberry of northern markets. The leaves fall quite early, a habit which appears to be possessed by the alpine and very dwarf *V. cæspitosum*, and also by *V. Canadense*, which in some respects is very similar to the Low Blueberry. The leaves of the northern Bog Bilberry (*V. uliginosum*) are also quite early deciduous. The Deerberry or Squaw Huckleberry (*V. stamineum*) apparently loses its leaves without taking any bright colors. It is almost impossible here to get perfect fruit or seed of this species because of some small lepidopterous larvæ, which live within the berries and destroy them before they are fully ripe. The rare and edible-fruited *V. hirsutum*, from the mountains of North Carolina, is as beautiful in the richness of its autumn coloring as *V. corymbosum*, and it also has the merit of retaining its leaves until those of nearly all other deciduous species have fallen. The true Huckleberries (*Gaylussacia resinosa* and *G. frondosa*) hold their leaves well and they also assume pleasing purplish and orange colors.

The Sorrel-tree or Sour-wood (*Oxydendrum arboreum*) is hardly surpassed by the Flowering Dogwood in the depth and richness of its autumn foliage, but the leaves drop easily, and the plants here are leafless comparatively early in the season. Many of the leaves of the Stagger-bush (*Andromeda Mariana*) hold until quite late in November, and are often quite brightly colored; and perhaps no deciduous species in the whole family is more showy than *Leucothoe racemosa*, with purple, scarlet and orange foliage, which persists throughout the month. Although the flowers of this plant are of no ornamental value it is nevertheless a desirable one for planting in shrubberies and other situations where very late autumn color is a desideratum. It is easily cultivated, and once established it slowly increases and spreads by underground shoots. The beautiful flowering *Andromeda speciosa* retains its leaves in a fresh appearing condition quite as late as *L. racemosa*. Many of them gradually become yellowish, but there is no display of color.

Among the hardy deciduous Rhododendrons or Azaleas there appears as a rule to be little very attractive and constant character in the late color of the foliage. Some of them become purplish or reddish, others dull yellow or brown. The beautiful flowered *Rhododendron Vaseyi* possesses handsomer autumn foliage than any other, as it first turns purplish and later to a deep crimson, and generally persists well into November. The leaves of its nearest American ally, the Rhodora, gradually dry without coloring, and leave the plants leafless quite early in the season.

Arnold Arboretum. *J. G. J.*

Potentillas.—It may be a help to those who know this bright, free-blooming family of summer-flowering perennials to have a short list of some of the best and most distinct varieties. There may be others quite as good, and I should be pleased to know of them through other correspondents. All the varieties enumerated are double, as the single ones, although very bright, are not nearly so lasting. The foliage of all the Potentillas have a close resemblance to that of the Strawberry, to which it is nearly allied. The flowering season is during the summer and early fall. Gloire de Nancy, golden yellow, large, full flowered; Jane Salter, orange shaded with scarlet, medium size, free; La Vesuve, bright red fringed with yellow, very double; Mars, dark velvety red, very free flowering; Perfecta, maroon shaded with lemon, very distinct variety; Wm. Rollinson, dark reddish crimson, splashed with orange, the freest flowering variety of all.

Norwood, Mass. *C. H. Rea.*

Correspondence.

The Lake Scenery of Central New York.

To the Editor of GARDEN AND FOREST:

Sir.—The policy which you have often advocated of establishing a state board of trustees empowerd to acquire and hold for public use and enjoyment tracts of interesting scenery, suggests a means whereby a most valuable feature of the lake scenery in central New York might be preserved. The rocky gorges through which flow the tributaries from the surrounding hills into these lakes still retain much of their original beauty, although the regularity of the water-flow has doubtless been materially changed by the clearing off of trees about their sources, and the frequent inroads made upon those which border these ravines upon either side. In spring the water rushes down in full streams, so that strongly supported bridges are needed to withstand their power; but as the season advances the channel becomes nearly or quite dry and in places exposed to the sunlight, while the more shaded portions are kept moist by springs along the hill-side, the waters of which filter through the soil and drip from the rocks. The timber in some instances has been removed entirely from the less precipitous slopes, which, if available, are cultivated; but where they have proved too steep or rocky for cultivation a new growth of trees is struggling to reoccupy the land.

From the summits of the hills that slope toward the lakes a very extensive view may be obtained, in which the trees that follow these water-courses are a most conspicuous and beautiful feature, comprising as they do a large variety of deciduous trees, interspersed with Pine, Hemlock and Red Cedar in considerable quantity, and the combination presents those inimitable shades of color which are only found in a wood of Nature's planting. These evergreens, growing down as they frequently do to the shore of the lake, are not less to be prized in the winter landscape.

Though holding, perhaps, a second place to the trees in importance, the loveliness seen by those only who penetrate these sequestered glens is surely worth preserving. The configuration of rock, as well as the verdure with which it and the soil are covered, vary so much in each one, that no matter how many of these glens we visit, each one has a charm as fresh as if no other one existed. Cascades are frequent, and the sound of falling water, either near or distant, makes constant music in almost all of these ravines. Ferns and Mosses follow the shade and moisture over rocks and hill-sides, growing out of crevices where no soil is visible. The little *Asplenium trichomanes* forms with the finer Mosses pretty mosaics on the rugged surfaces. The curious Walking Fern, *Asplenium rhizophyllum*, has a good footing in one locality, but is rare in others. As these and many other tender plants are now found only where shade and moisture are uninterrupted, it follows that if the timber is destroyed they must go with it, leaving bare rocks as a rule where now they are the exception.

Any intervention on the part of the public to stay the destruction of this beautiful as well as useful scenery would, of course, be unnecessary if the possessors of this natural inheritance realized its value; but as many of them do not, it is only by concerted effort on the part of those who do that any positive and hopeful step toward its preservation can be taken.

Klinger Lake, Mich. *Dorcas E. Collins.*

The Trees of the City of Washington.

To the Editor of GARDEN AND FOREST:

Sir.—No city in the country is so well supplied with well-planted and neatly kept public grounds as the national capital. This is largely due to the fact that the planting of the streets and most of the parks is under one management, thus permitting unity of design and effective treatment. Among the points of interest to be noted in the management of these grounds are the following:

1. The removal within the past few years of most of the fences surrounding the parks.

2. The planting of entire streets with trees of one species. For example, Eleventh Street, for its entire length of two miles, is lined on both sides with Sycamores; Fourteenth Street with Soft Maples; Sixteenth Street with Tulip-trees; Massachusetts Avenue with Lindens.

3. Severe pruning of trees which have become overgrown. For the best street effect full-sized trees are in most cases too large. Heavy pruning may injure the vitality of a tree and shorten its life, but the advantage often justifies the process. The Sycamores on Eleventh Street, now six to twelve inches in diameter, were three years ago cut back to bare poles and mere stubs of branches. Now they are as perfectly formed and thrifty trees as can be found in the city. This season the Honey Locusts have been treated in the same manner, though less severely. This tree is too spreading in habit for the best effect as a street tree.

4. Prompt removal of trees which have proved unsuitable, or which have become unhealthy or hopelessly overgrown. This is a point often neglected on grounds under private management. Sentiment frequently resists with the utmost persistence changes which the best judgment requires.

5. Surrounding the bodies of trees on the leading streets with galvanized wire netting, a precaution rendered doubly necessary by the fact that hitching rings and posts are almost unknown, and that it is the custom here more than in ordinary commercial cities to restrain horses by a weight or leave them unhitched altogether.

If I were to note any omissions they would be, the failure to utilize to a sufficient extent the leading native trees of the

district, especially the Oaks, which occur in great abundance and variety; also to provide in the parks as well as on the streets for the landscape effect produced by massing trees of a single species under conditions permitting their full development. A grove of Oaks, Chestnuts, or almost any other kind of tree, in a commanding position, with an abundance of room, is a feature the production of which occasionally is worth the sacrifice of considerable temporary or local effect. Perhaps more of this will be sought in Washington in planning the new parks recently provided for on Rock Creek.

Washington, D.C. *A. A. Crozier.*

Periodical Literature.

THE October number of the *Kew Bulletin of Useful Information* contains an article on cocoanut butter, a valuable edible fat prepared from the kernel of the cocoanut and recently introduced into commerce. It is a white, inodorless, almost tasteless fat, which solidifies at about sixty-five degrees Fahr., becoming above that temperature a pure white oil. Mr. Morris, the editor, says that "if cocoanut butter can be prepared, as is suggested, from the ordinary 'copra' or dried kernel of the cocoanut as shipped from tropical countries, there would be an almost unlimited supply of the raw material available from various parts of the world." According to Dr. Zerner, of the Royal Imperial and General Hospital in Vienna,

"The cocoanut butter, which, on account of its low melting point, is exported in tins, furnishes a pure white transparent mass of the consistence of lard without granular texture, which at a temperature of seventy-nine degrees Fahr. melts to a clear fluid and solidifies again at sixty-seven degrees Fahr. It has a slight agreeable smell, melts on the tongue, leaving a mild, but in no respect acrid taste behind it. In ether it dissolves completely. If the ether is evaporated over water and distilled water is added to the residue, the solution gives a neutral reaction. I have often repeated this test with cocoanut butter which had remained open for days (fourteen days), also with pharmaceutic preparations eight to fourteen days old, in the preparation of which cocoanut butter had been used. The cocoanut butter is therefore free from fatty acids, and even if left open for the space of eight to fourteen days does not turn rancid, with the exception of the top layer, which comes in contact with the air.

"With regard to its chemical composition, cocoanut butter differs from most other fats, and particularly butter, lard and margarin. In its fatty constituents and the amount of volatile fatty acids, it stands next to butter among solid fats.

"Cocoanut butter differs from all other vegetable and animal fats by its saponification degree (258.5 according to Rud. Benedikt in Vienna), and on account of this high saponification degree all adulteration is impossible.

"Artificial digestion tests seem to show that the cocoanut butter exercises no injurious influence whatever over digestion.

"The next point was to ascertain how the cocoanut butter stands with regard to micro-organisms. It is well known that in this respect milk butter is very far from perfect, as apart from the numerous germs, which, for the most part, are not pathogenic, that may be introduced during its preparation, and the microbes already present in the milk itself, this article of food affords an excellent nutrient fluid for a large number of micro-organisms.

"It follows that, although in any given case other ways and means of infection may be excluded, this may still take place through the agency of milk and butter. The possibility of a transfer to the human consumer of the Tubercle-bacillus, as well as of other micro-organisms, which have got into the milk from animals suffering from infectious diseases, is in the case of cocoanut butter, a vegetable fat, excluded from the first. Cocoanut butter has been proved by our investigations to be both free from germs and also to be a very bad nutrient medium for micro-organisms. Even when Agar-Agar or Ceylon Moss (*Gracilaria lichenoides*) was mixed with the cocoanut butter, and then allowed to remain open, the number of germs was found to be less than in Agar-Agar without the mixture of butter. One more experiment may be mentioned. If sterilized milk is added to cow butter and kept at a warm temperature the milk coagulates in twenty-four hours, proving the presence of bacteria in the butter. This coagulation does not take place if, instead of milk butter, cocoanut butter is added to the milk.

"From what has already been said the conclusion may safely be drawn that the cocoanut butter, from a chemical and bacteriological point of view, meets all the requirements of a food substance.

"Our further investigations were directed to ascertaining whether cocoanut butter was suitable to healthy and sick people alike. Through a period of four weeks we distributed food to 116 patients in the form of pastry, roast meats and farinaceous foods, in the preparation of which cocoanut butter was used in the place of fats.

"On account of this fat being almost free from water, one-quarter less may be taken, both in baking and cooking, than is generally used, if ordinary butter or lard is employed; and for the same reason it is necessary in making pastry to replace the twenty-five per cent. of water, which the cocoanut butter contains less than any other fat, by adding from seven to eight tablespoonfuls to about every pound of butter used.

"A little more salt must be added to the food, and the butter must always be heated before being used for cooking. Foods prepared in this way, as well as pastry, were always found to be eaten without any inconvenience whatever. The taste was undoubtedly pleasanter than in dishes prepared with animal fats. The statement of a colleague, Dr. H., is of particular importance in this respect. After recovering from disorder of the stomach he could not eat pastry without being afterward troubled with pyrosis and cardiac pain. He could eat pastry prepared with cocoanut butter almost without any inconvenience.

"The experiments with patients proved cocoanut butter to be an easily digested fat that causes no disorders in cases of impaired digestion. Of the 116 patients, amongst whom were individuals affected with every form of dyspepsia, not one complained of any discomfort or of any ill effect after the consumption of pastry prepared with cocoanut butter, though pastry, as a rule, is not an easily digested food on account of the fat. In three cases where the pastry was partaken of an hour after vomiting, there were no ill results noticeable; on the contrary, a fresh supply was desired by the patients.

"We arrive at the conclusion that a fat has been found in cocoanut butter which meets all hygienic requirements, and which is far superior to animal fat and butter, as well as to any of their other substitutes. Further, on account of its being easily digested, cocoanut butter is particularly well adapted for the use of patients suffering from impaired digestion."

Notes.

The largest Orange grove in the world will be planted this winter in the San Jacinto Valley, San Diego County, California. The largest grove at present is in Pomona and covers 400 acres. The new one will contain 700 acres of the best varieties.

Walpole used a pretty and epigrammatic expression in speaking of Kent, the "father of modern landscape-gardening." Dissatisfied with the formal style of gardening previously in vogue, "he leaped a fence," writes his biographer, "and saw that all nature was a garden."

Very many of the Horse-chestnut-trees which line the Prater and certain streets in the interior of Vienna bloomed profusely toward the end of last September. The phenomenon had often been noted there before on isolated trees, but is said never to have been so widespread as this year.

Freaks in fence-building are not uncommon in New England. Not many miles from New Bedford, for instance, is a solid fence with a curiously curved upper line and here and there a number painted upon it in white. On examination it proves to be built of the pew-doors from a dismantled church. And now we read in the *Times*, of Bath, Maine, an account of a man, attached to the life-saving station at Small Point, who has amassed enough swords of the swordfish to build a picket fence forty feet in length.

The first Chrysanthemum exhibition held in Newport, Rhode Island, was open on the 11th, 12th and 13th of November. The attendance was poor, owing to unfavorable weather, but the display of flowers was satisfactory. The largest contributions came from the gardens of ex-Governor Wetmore and Mr. Louis Lorillard, but there were very creditable contributions also from Vice-President Morton, Mr. Fairman Rogers, Mrs. G. F. Jones, Mr. Cornelius Vanderbilt, Mr. D. B. Fearing and a number of others.

Among the highly successful Chrysanthemum exhibitions of the season was one held in Buffalo under the auspices of the florists' club of that city. Besides the plants and flowers exhibited by the city growers, Messrs. Pitcher & Manda, of New Jersey; Kimball, of Rochester; Dreer, of Philadelphia, and W. L. Scott, of Erie, Pennsylvania, contributed noteworthy

collections of Orchids and decorative plants. Some specimens of the Mrs. Alpheus Hardy were exceptionally robust and well grown, and a group of new Carnations of striking form and color were shown by Gustavus Schoenfeld, of Westfield, New York.

Mr. C. M. Weed, of the Ohio Experiment Station, in speaking of the Curculio which is destructive of Rhubarb, says that during the present year its life history has been traced, and it now appears that the insect hibernates as an adult, and in spring deposits its eggs in certain common species of Dock, especially Curly Dock—*Rumex crispus*. From the discovery of the breeding habits of this Curculio it seems evident that the best way to prevent its ravages is to destroy the Dock-plants on which it develops. If these are pulled up, roots and all, say late in June, before they have gone to seed, and burned, a great many of the insects will be destroyed.

Hundreds of thousands of plants and flowers are now on exhibition in Madison Square Garden. The display is not only remarkable as the collection of a single firm, the Messrs. Pitcher & Manda, but it would be classed as an admirable exhibition anywhere. Chrysanthemums are, of course, a leading feature, and although the season is so well advanced many first-class blooms are seen. The bank of Cypripediums in the centre of the Garden could not be duplicated by any establishment in the world, and the exhibition is rich in other Orchids, specimen Palms and Ferns. The immense space is well filled, and the plants are tastefully and effectively arranged.

The tomb of the poet John Boyle O'Reilly is to be marked in Holyhood Cemetery, Brookline, Massachusetts, by a giant boulder about twelve feet in diameter, which lies just as the glacier left it on the crest of a picturesque little hill. It would be well if monuments of this sort were more often used in our rural burial-grounds instead of the costly, ugly and obtrusive specimens of the stonecutter's art which are too commonly employed. Even if such a stone cannot be found in an appropriate place, it can easily be removed and so arranged with vines that will quickly drape it, that it will present a natural appearance. Nothing is needed to fit it for a monument except that a small space should be smoothed like a tablet to bear the inscription, as will be done in the case of Mr. O'Reilly's tomb. Apart from their harmonious and modest, yet dignified, effect, no monument is so imperishable as one of these which Nature herself has made.

The great game park which Mr. Austin Corbin has established near Newport, New Hampshire, and which contains 22,000 acres chiefly of mountain land, is being rapidly stocked with animals. Already some 250 head of buffalo, elk, moose, black-tail deer, white-tail deer, red deer, caribou, antelope, and wild boars from the Black Forest of Germany are roaming at large in the park, while contracts for as many more animals have been made with trappers at the west. Some of the species have already begun to breed, and the scheme promises results as satisfactory to the lover of great game as to those who are interested in any enterprise which involves the preservation of large tracts of beautiful country in their natural condition. It is said that Mr. Corbin does not intend to allow his animals to be hunted, and it will be some time before he must decide what shall be done with them when they have multiplied in excess of the capacity of the park to support them.

In an address before the Pennsylvania Horticultural Society Mr. John Thorpe stated that many forms of Chrysanthemums were undoubtedly introduced from Europe to America before the beginning of the present century, and that he had traced back some varieties as far as 1811, and, indeed, he exhibited a variety which had been cultivated in one family for more than sixty years. There are many kinds to be seen in Virginia that have been known there for over fifty years. They are nearly all Pompons, though some are of the Chinese sorts, as old Lilac, Golden Yellow and the Changeable White. He added that he had lately seen in a volume of the *Gardeners' Monthly* for 1860 an account of an exhibition thirty years ago in Philadelphia in which Chrysanthemum-plants of perfect shape and fifteen feet in circumference were shown. Some of the Pompons, like Madame Lafarge, Sacramento, Rosette and Napoleon, had between two and three thousand flowers expanded at once upon them.

The inhabitants of New York State seem at last to be awake to the necessity of preserving their forests. Together with the promising outlook of the scheme for forming a great state park in the Adirondacks, we have to chronicle the fact that a movement has been started at Kingston for the establishment of a similar park in the Catskills, and that the matter, it is hoped, will be brought before the incoming Legislature. The state already owns 30,000 acres in the Catskill region, and it is probable that this amount will be increased by the Comptroller's tax-sale which will take place in December. Many private parks have within recent years been established in these mountains, and despite the fact that they were formed to accommodate colonies of summer visitors, the preservation of the forests has been helped, not hindered, by them. The amount of forest which is cleared for the building of houses is very small in comparison to that which must be preserved to perpetuate the charm of neighborhood and outlook upon which the value of the dwellings depends. Their owners have chosen the various sites for their picturesque beauty, and understand that this beauty must be kept as intact as possible. Nevertheless, there is room and need, here as well as in the Adirondacks, for the establishment of a state reservation.

On the occasion of a ball recently given in the club-house at Tuxedo Park the decoration of the ball-room was entrusted to an expert, who, nevertheless, is not a florist—Miss Stearns, of the Associated Artists of 115 East Twenty-third Street. The result proved that something might be done in the way of floral decoration which would lack the conventionality that so often marks such arrangements without falling into the heterogeneousness of amateur attempts. The room is very large and circular in shape, with fourteen windows alternating with fourteen columns which sustain the cornice. On one side is a stage where the musicians were to sit. This was decorated in harmony with the pretty woodland scene which formed the background, high Palms flanking the sides, while a row of lower Palms, mingled with Chrysanthemums, bordered the stage, and trailing Ivy fell over the front. Chrysanthemums were also intermixed with the taller Palms, in three shades of pink, making a charming effect as the electric light shone up over them from the foot-lights. This scheme was continued around the room by banking the window-recesses with Hemlock boughs and great sprays of white Chrysanthemums, the dark green foliage being carried up into the coves of the domed ceiling. The columns were covered with autumn foliage, Oak-leaves of a dark reddish bronze color forming the base, and being shaded gradually up into terra-cotta tones and finally into the yellow of Maple foliage. On this background Chrysanthemums were arranged, likewise in graded colors, beginning below with dark red blossoms and shading up to the capitals, which were encircled by masses of golden Grandiflorums. To obviate, however, an undue contrast between these red and yellow pillars and the pink and green of the stage, the two columns adjoining these were differently treated, being wound with Hemlock foliage interspersed with white Chrysanthemums—the same scheme of color chosen for the window recesses. The total effect of the beautiful room thus adorned was at once dignified and festal, and—an essential consideration in such cases—it made an excellent background for the gay dresses which filled it.

Catalogues Received.

William Bull, Chelsea, London, S. W., Eng.; Tuberous-rooted Plants and Bulbs.—John Lewis Childs, Floral Park, Queens County, N. Y.; New and Rare Flowers; Bulbs, Plants and Fruits.—A. M. C. Jongkindt Coninck, Dedemsvaart, Netherlands; Wholesale Trade-List of Coniferæ, Rhododendrons, Roses, Fruit-trees, Hardy Perennials, etc.—Ellwanger & Barry, Rochester, N. Y.; Fruit and Ornamental Trees, Shrubs, Roses, etc.—The Eureka Steam Heating Company, Rochester, N. Y.; The Plaxton Hot Water Heater.—J. Roscoe Fuller & Co., Floral Park, N. Y.; Hardy Bulbs and Plants.—C. S. Harrison, Franklin, Neb.; Descriptive Catalogue of Rocky Mountain Evergreens.—V. H. Hallock & Son, Queens, N. Y.; Autumn Bulbs and Plants.—C. S. Hood & Co., Corning, N. Y.; Heaters.—Herendeen Manufacturing Co., Geneva, N. Y.; The Furman Vertical Water Tube, Steam and Hot Water Heaters.—J. T. Lovett Co., Little Silver, N. J.; Wholesale Price List of Small Fruits and Fruit-trees.—T. V. Munson, Denison, Texas; Strawberries, Grape-vines, Fruit-trees, and Ornamental Trees and Shrubs.—New York Central Iron Works, Geneva, N. Y.; Steam Engines and Boilers.—Osgood & Thompson, Binghamton, N. Y.; Scales.—G. W. Pressey, Hammonton, N. J.; Incubators.—Pierce, Butler & Pierce Manufacturing Co., Geneva, N. Y.; Heaters.—Pitcher & Manda, Short Hills, N. J.; Orchids.—Reasoner Brothers, Manatee, Fla.; Tropical and Semi-Tropical Fruit Plants, Economical, Medicinal and Useful Plants, Aquatics, Palms, Orchids, etc.—Syracuse Chilled Plow Co., Syracuse, N. Y.; Plows.—P. & E. Transon Brothers, Orleans, France; Nursery Trade List.